
ANNEX 2

IPCC AND CORINAIR SOURCE CATEGORIES

This chapter briefly explains the origins of the IPCC and CORINAIR, the correspondences between the IPCC and CORINAIR/UNECE source categories, and outlines how to report the results from the CORINAIR inventory system in an IPCC format. At present, CORINAIR/UNECE is the only known inventory programme used by many countries of which the scope and objectives significantly overlap those of the IPCC. Many individual countries certainly have other detailed national inventory approaches which have similar characteristics to CORINAIR. For these countries, this example of reconciling IPCC and CORINAIR source categories may be helpful in addressing similar conversion problems. The IPCC/OECD/IEA Programme will work with interested countries and other organisations as far as possible to help achieve correspondence with IPCC categories in order to avoid duplication of effort at national and international levels.

A2.1 Origins

The IPCC source and sink categories for the estimation and reporting of national inventories of greenhouse gas emissions is slightly different than categories that have been developed by the Commission of European Communities (CEC) for use in Europe. The reasons for these differences lie, first, in the origin of the two inventory systems and, second, in the primary uses for the inventory data. However, for the recent inventories (from 1994 and onwards) these systems are consistent and harmonised.

The European Union (EU) emission inventory programme (CORINAIR) was set up by the European Council of Ministers in 1985 to assist in the development of consistent, comparable and transparent national inventories for “conventional” air pollutants such as SO_x, NO_x, and VOC. The first CORINAIR inventories were developed for 1985. The next CORINAIR inventories, for the year 1990, were initiated by the European Environment Agency Task Force. For these inventories, the pollutant list was extended to include NH₃, CO, CO₂ and N₂O, as well as to separate CH₄ from NMVOC. Support was given to Central and Eastern European countries resulting in emission inventories for 1990, covering 29 countries.

A further development of the CORINAIR system came in 1991, when the United Nations Economic Commission for Europe (UNECE) helped define the main CORINAIR categories as a basis for reporting under the Long Range Transboundary Air Pollution (LRTAP) Convention. The pollutants of interest not only include those covered in specific protocols (i.e. SO_x, NO_x, and VOC) but also pollutants that influence the critical loads of acidic deposition, such as NH₃. In 1992, the UNECE also established a Task Force on Emission Inventories (TFEI) with a main objective to develop a guidebook for emission inventories summarising the CORINAIR/UNECE recommendations on estimation and verification methods.

A2.2 CORINAIR Methodology and its Applications

The joint EMEP/CORINAIR Atmospheric Emission Inventory Guidebook (EMEP/CORINAIR Guidebook) was first published in February, 1996. It is available as a CD-ROM and on the Internet. The UNECE/TFEI will continue its work of improving and updating the EMEP/CORINAIR Guidebook in co-operation with the European Environment Agency (EEA). In 1995, the CORINAIR project was integrated into the work programme of the EEA, and the European Topic Centre on Air Emissions (ETC/AE) was contracted to continue the CORINAIR project. The main task of the ETC/AE is to assist the participation of the EU-15 countries, as well as other European countries to report national inventories as required under international obligations. The CORINAIR project is an annual European air emission inventory, for which the list of pollutants has been extended to include heavy metals and persistent organic pollutants (POPs), from the reporting year 1994 onwards.

The CORINAIR methodology requires countries to collect emission estimates using a detailed source nomenclature (SNAP) and a detailed spatial level (NUTS level 3). From the resulting emission inventory, the methodology can be used to aggregate, allocate and report emission estimates for different reporting purposes. For example:

- IPCC format (UN FCCC);
- UNECE/EMEP (LRTAP Convention);
- EU Monitoring Mechanism of CO₂ and other greenhouse gas emissions.

Complete harmonisation between the IPCC and CORINAIR source categories has been achieved for the reporting year 1994, and onwards.

The purpose of inventory development under UNECE is to support the monitoring of progress of the implementation of the LRTAP protocols. One of the principal users of the inventories are modellers who support the implementation of the Protocols under the LRTAP. The main requirement of the modellers is to estimate the sources of SO_x, NO_x, NMVOC, and NH₃ emissions on a 50 km x 50 km square grid basis across Europe. These data are then the basis of the calculations estimating acidic deposition and photochemical oxidants across Europe which tie back to the concepts of "critical loads" for acidificate and "critical levels" for photochemical oxidant. The calculations show national progress or future acquirement to meet these critical thresholds.

A2.3 Correspondences Between IPCC and CORINAIR Source Categories

The UNECE requirement to establish a much more detailed understanding of the physical source and geographic distribution of emissions has led to source categories based on the physical characteristics of the sources of pollutants. The IPCC has proceeded on the basis that socio-economic sources are the easiest and most appropriate groupings for describing

emissions, which in turn will facilitate the use of inventories for policy analysis.

The CORINAIR/UNECE system uses type of physical plant or vehicle, as the fundamental basis for emission estimation. This allows high accuracy in description of individual point or mobile sources and in use of appropriate emission factors for conventional pollutants. From the resulting detailed emissions inventory, the methodology can be used to aggregate, allocate and report emission estimates for different reporting purposes. For example, the CORINAIR methodology has been improved to include energy statistics and to enable countries to report emissions in complete accordance with the *IPCC Guidelines*.

An overview of correspondence between IPCC and CORINAIR source categories at the highest aggregated IPCC level (Short Summary Report Table, 7B) is presented in the following table.

IPCC AND CORINAIR SOURCE CATEGORIES

TABLE A2-1	
CORRESPONDENCES BETWEEN IPCC AND CORINAIR MAIN SOURCE CATEGORIES	
IPCC	CORINAIR
1 Energy	
1 A Fuel Combustion Activities	01 Combustion in Energy and Transformation Industry 02 Non-industrial Combustion Plants 03 Combustion in Manufacturing Industry 07 Road Transport 08 Other Mobile Sources and Machinery
1 B Fugitive Emissions from Fuels	05 Extraction and Distribution of Fossil Fuels and Geothermal Energy
2 Industrial Processes	04 Production Processes
3 Solvent and Other Product Use	06 Solvent and Other Product Use
4 Agriculture	1001 Cultures with Fertilisers (except animal manure) 1002 Cultures without Fertilisers 1003 On-Field Burning of Stubble, Straw.... 1004 Enteric Fermentation 1005 Manure Management 1006 Use of Pesticides
5 Land-Use Change & Forestry	Managed Deciduous Forests Managed Coniferous Forests Changes in Forest and other Woody Biomass Stocks Forest and Grassland Conversion Abandonment of Managed Lands CO ₂ Emissions and Removals from Soil Others
6 Waste	09 Waste Treatment and Disposal
Memo Items	
International Aviation Bunkers	080502 International Airport Traffic 080504 International Cruise Traffic
International Marine Bunkers	080404 International Sea Traffic
CO ₂ Emissions from Biomass	Biomass fuels in categories 01, 02, 03, 07, 08

A2.4 Harmonisation Between IPCC and CORINAIR Source Categories

Progress has been made in the harmonisation of the IPCC and EMEP/CORINAIR methodologies to allow more direct comparison of the two approaches. These changes are mainly in the Energy Chapter of the *Revised 1996 IPCC Guidelines*:

- Biomass fuels are allocated to the various source categories.
- Emissions from fuel used for electricity and heat production by autoproducers are included in the sector where they are generated and not within the transformation industries.
- Treatment of evaporative emissions (NMVOCs) from road transport in the Tier 2 method of IPCC is made consistent with CORINAIR. Combustion and evaporative emissions are to be reported separately. However, in the Tier 1 IPCC method, all emissions from road transport are included together under fuel combustion.

Development of a Tier 2 method for estimating emissions from aircraft.

A2.5 How to Transform a CORINAIR Inventory into an IPCC Inventory

For the IPCC Short Summary Report Table (Table 7B), which is at the most aggregated level of reporting, Table A2-1 provides correspondence for the CORINAIR definitions. For the Summary Report (Table 7A) and the Sectoral Report Tables (Tables 1-6), more detailed alignment between the IPCC source/sink categories and the CORINAIR definitions is required. The joint UNECE/CORINAIR Guidebook and appropriate computer programme have been revised to facilitate conversion from a CORINAIR to an IPCC inventory at the level of detail required for the Sectoral Report Tables.

Further information can be obtained from:

Andre Jol
European Environment Agency
Phone: (45 33) 367 144 / Fax: (45 33) 367 191
e-mail: jol@eea.dk

A2.6 Looking Forward

Both the IPCC and the UNECE/CORINAIR programmes are committed to on-going harmonisation between the two methodologies which have become increasingly compatible over the years. In order to ensure that the CORINAIR methodology evolves in a completely consistently manner with the *IPCC Guidelines*, there will continue to be regular contact between the two programmes. This will both facilitate an exchange of ideas and minimise duplication of effort.